Embedded Board

BNX-A61B

BESTEK

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User Manual

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FCC and DOC Statement on Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio TV technician for help.

Notice:

1. The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
2. Shielded interface cables must be used in order to comply with the emission limits.

Warranty

1. Warranty does not cover damages or failures that are raised from misuse of the product, inability to use the product, unauthorized replacement or alteration of components and product specifications.
2. The warranty is void if the product has been subject to physical abuse, improper installation, modification, accidents or unauthorized repair of the product.
3. Unless otherwise instructed in this user's manual, the user may not, under any circumstances, attempt to perform service, adjustments or repairs on the product, whether in or out of warranty. It must be returned to the purchase point, factory or authorized service agency for all such work.
4. We will not be liable for any indirect, special, incidental or consequential damages to the product that has been modified or altered.

Static Electricity Precautions

It is quite easy to inadvertently damage your PC, system board, components or devices even before installing them in your system unit. Static electrical discharge can damage computer components without causing any signs of physical damage. You must take extra care in handling them to ensure against electrostatic build-up.

1. To prevent electrostatic build-up, leave the system board in its anti-static bag until you are ready to install it.
2. Wear an antistatic wrist strap.
3. Do all preparation work on a static-free surface.
4. Hold the device only by its edges. Be careful not to touch any of the components, contacts or connections.
5. Avoid touching the pins or contacts on all modules and connectors. Hold modules or connectors by their ends.

Important:

Electrostatic discharge (ESD) can damage your processor, disk drive and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

Safety Measures

To avoid damage to the system:
• Use the correct AC input voltage range.

To reduce the risk of electric shock:
• Unplug the power cord before removing the system chassis cover for installation or servicing. After installation or servicing, cover the system chassis before plugging the power cord.

Battery:
• Danger of explosion if battery incorrectly replaced.
• Replace only with the same or equivalent type recommend by the manufacturer.
• Dispose of used batteries according to local ordinance.

Before Using the

Before using the system, prepare basic system components.

If the system comes as a barebone; that is, none of the key components, including processor, memory, and hard drive has been pre-installed as part of your purchase, you will need to at least ensure a compatible counterpart is located and installed.

You will also need a few external system peripherals intended for the use of the system, a common pool with at least a keyboard, a mouse, and a monitor is thus suggested.

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Chapter 1
General Information

1.1 Main Feature

ATX System Board

BNX-A61B is a standard ATX motherboard featuring Intel® H61 PCH chipset supports Intel® Gen-2/3 Core™ processor and two Dual Channel DDR3 DIMM slots up to 16GB DDR3 1066/1333/1600MHz SDRAM with Non-ECC support and integrated HD graphic controller.

- Intel® Gen-2/3 LGA1155 Sandybridge & Ivybridge Processor
- Two DDR3 RAM Slots up to 16GB
- Four SATA Ports: 4* SATA 2.0
- Two Display Ports: DB15 VGA, DVI-D
- Six Series Ports: One supporting RS-232/422/485
- Nine USB 2.0 ports: Four Edge Ports + Five Internal Ports
- Two Realtek GbE LAN Ports
- 1* PCIe X16 Slot (2.0/3.0 by CPU)
- 2* PCIe X1 Slot
- 1* full-sized miniPCIe Slot
- 4* PCI Slots

1.2 Specifications

Core Engine	Chipset	Intel® H61 PCH
	Processor	Support Intel® Gen-2/3 Core i3, i5, i7, Pentium®, Celeron® Processor Single LGA1155 Processor Socket
	Memory	2x DDR3 1066/1333 DIMM Slots, up to 16GB, Non-ECC/Non-Buffered Memory Module
	Display	Intel® HD Graphics 2000/2500/4000
Ethernet	Controller	Onboard 2x Realtek RTL8111F PCIe GbE Controllers, Support WOL and PXE
Storage	SATA	4x SATA2 Ports
Expansion	PCIe X16	1x
	PCIe X1	2x
	PCI	4x
	miniPCIe	1x Full-sized
Edge I/O	PS/2	2x PS/2 for Keyboard and Mouse
	COM	1x DB9 RS-232, 1x DB9 RS-232/422/485
	Display	1x DB15 VGA + 1x DVI-D
	LAN	2x RJ45 GbE
	USB	4 x USB 2.0
	Audio	3x Audio Jacks (ALC887)
Internal I/O	Front Panel	1x Front Panel Switch/LED Header
	LPT	1x Parallel Box Header
	COM	4x RS-232 Pin Headers
	USB	5x USB2.0 Pin Headers
	DIO	8x DIO Pin Header
	TPM	1x TPM Header
	Chassis Intrusion	1x 2-pin Pin Header
	Fan	3x Fan Connectors
Other	H/W Monitoring	Monitor temperature, voltage, and fan speed, auto-throttling control at CPU overheat
	WDT	1 sec increment from 1 to 255 sec
Environment	Operating Temp.	0ºC ~ 60ºC
	Storage Temp.	-20ºC ~ 70ºC
	Humidity	10% ~ 90% (Non-Condensing)
Mechanical	Dimension	305mm (W) x 244mm (D)

1.3 Board Layout

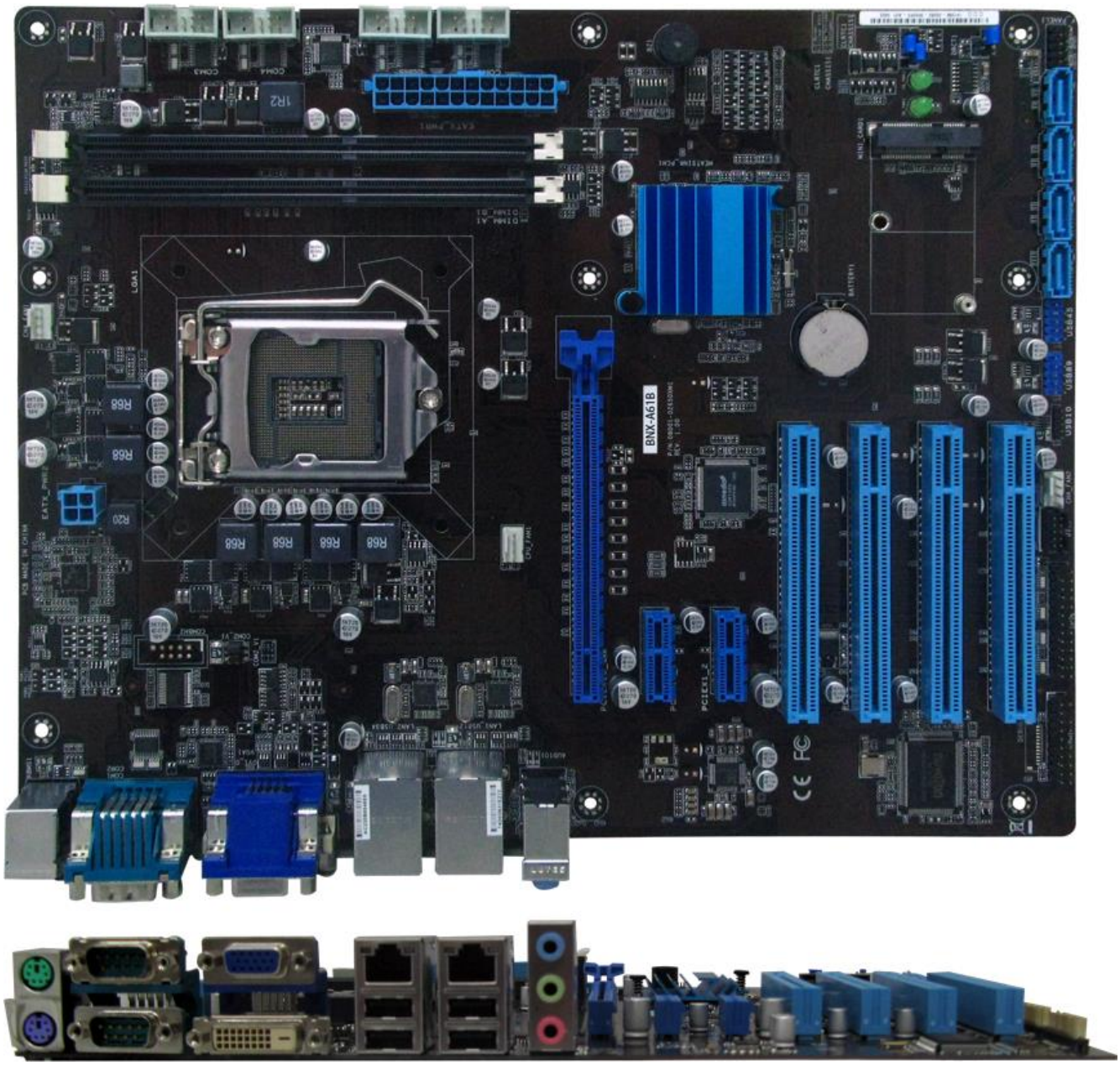


Figure 1.1: Board Layout of BNX-A61B

Chapter 2
Preparation

2.1 Before You Begin

A stable and clean working environment are essential. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.
Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:

- A Philips screwdriver
- A flat-tipped screwdriver
- A set of jewelers Screwdrivers
- A grounding strap
- An anti-static pad

Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nosed pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

Before working on internal components, make sure that the power is off. Ground yourself before touching any internal components, by touching a metal object. Static electricity can damage many of the electronic components. Humid environment tend to have less static electricity than dry environments. A grounding strap is warranted whenever danger of static electricity exists.

2.2 Precautions

Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on the computers that are still connected to a power supply can be extremely dangerous. Follow the guidelines below to avoid damage to your computer or yourself:

- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Hold electronic circuit boards by the edges only. Never touch the components on the board unless it is necessary to do so. Do not flex or stress the circuit board.
- Leave all components inside the static-proof packaging that they shipped with until they are ready for installation.
- Use correct screws and do not over tighten screws.

2.3 Setting Jumpers

A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is SHORT. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is OPEN. Please see the following illustrations

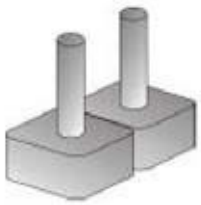
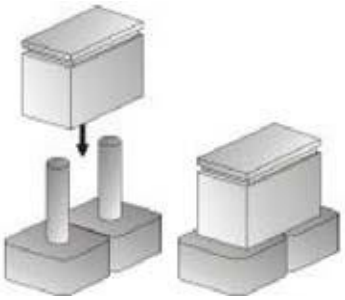
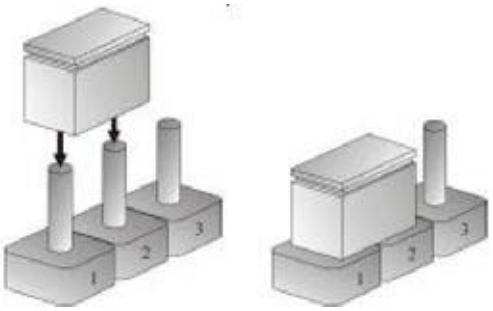
<table>
<tr><td rowspan="2">The illustrations on the right show a 2-pin jumper. When the jumper cap is placed on both pins, the jumper is SHORT. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is OPEN.</td><td>  </td><td>  </td></tr>
<tr><td>Open (Off)</td><td>Short (On)</td></tr>
<tr><td>These illustrations show a 3-pin jumper. Pins 1 and 2 are SHORT.</td><td colspan="2">  </td></tr>
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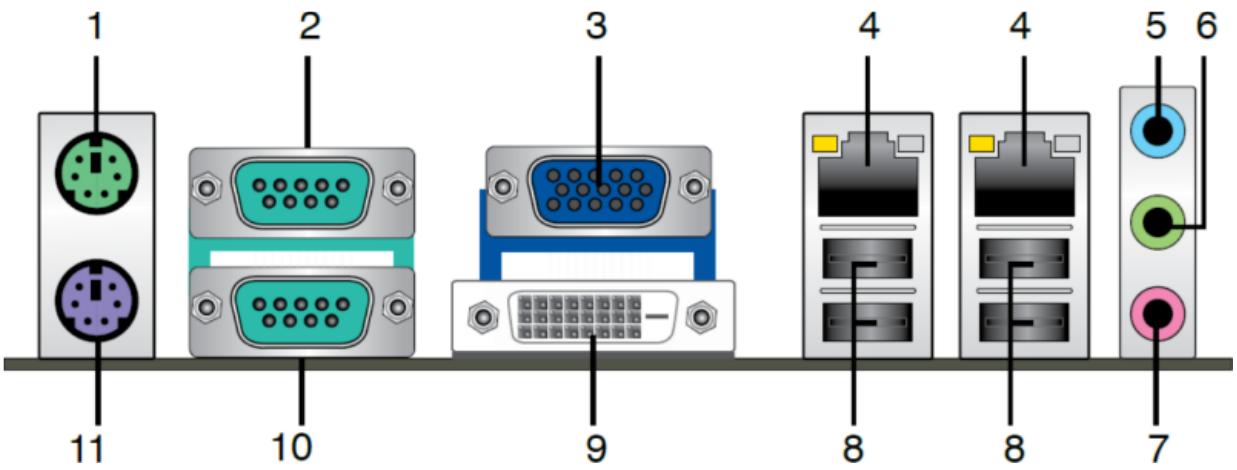
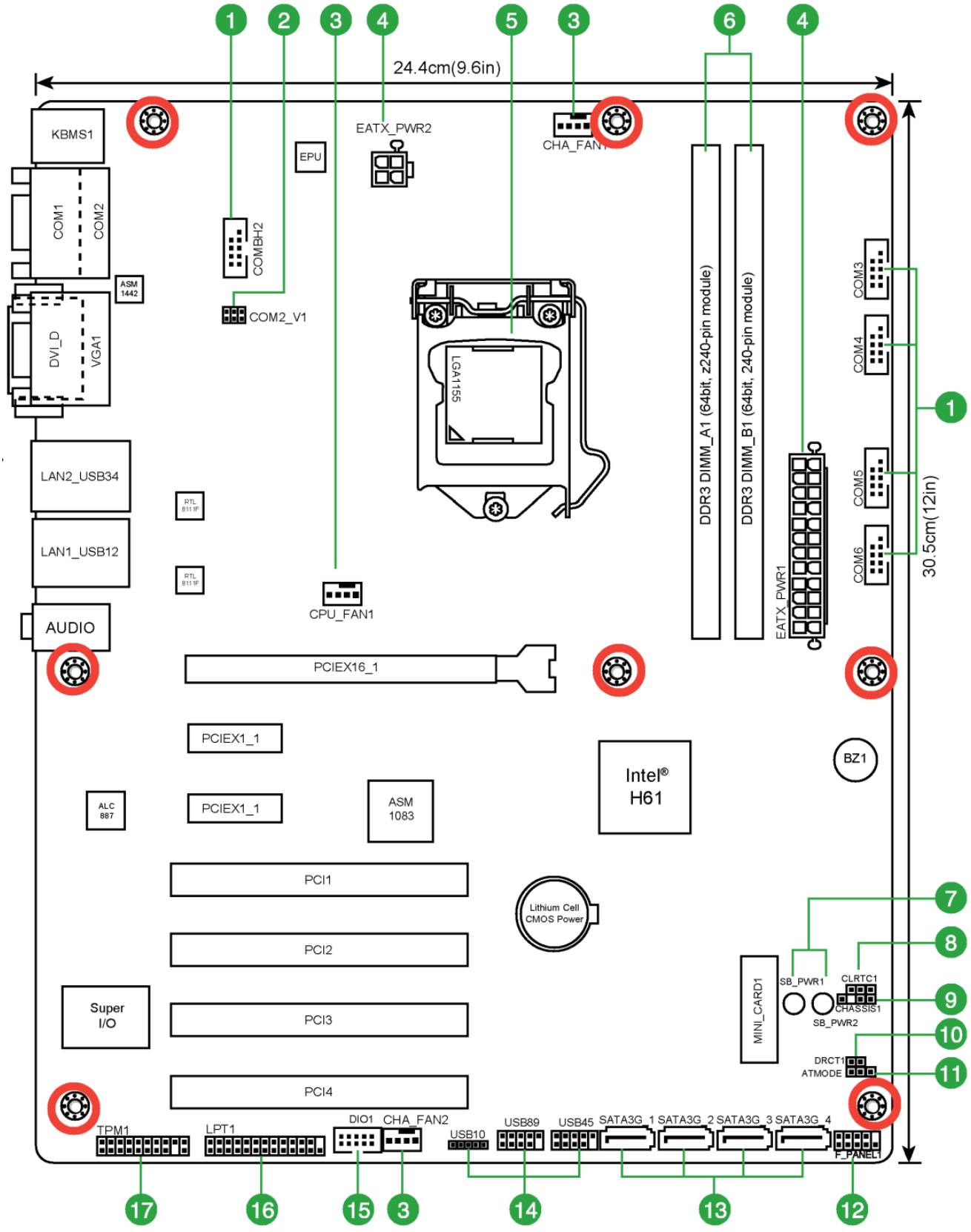
Table 2-1: Setting Jumpers

2.4 Back Panel Connectors



1. PS/2 Mouse (Green)
2. DB9 RS-232/422/485 (Configurable via BIOS)
3. DB15 VGA
4. LAN1 & LAN2
5. Line-In Jack
6. Line-Out Jack
7. Microphone Jack
8. 4* USB 2.0
9. DVI-D
10. DB9 RS-232
11. PS/2 Keyboard (Purple)

2.5 Locations Of Jumpers and Connectors

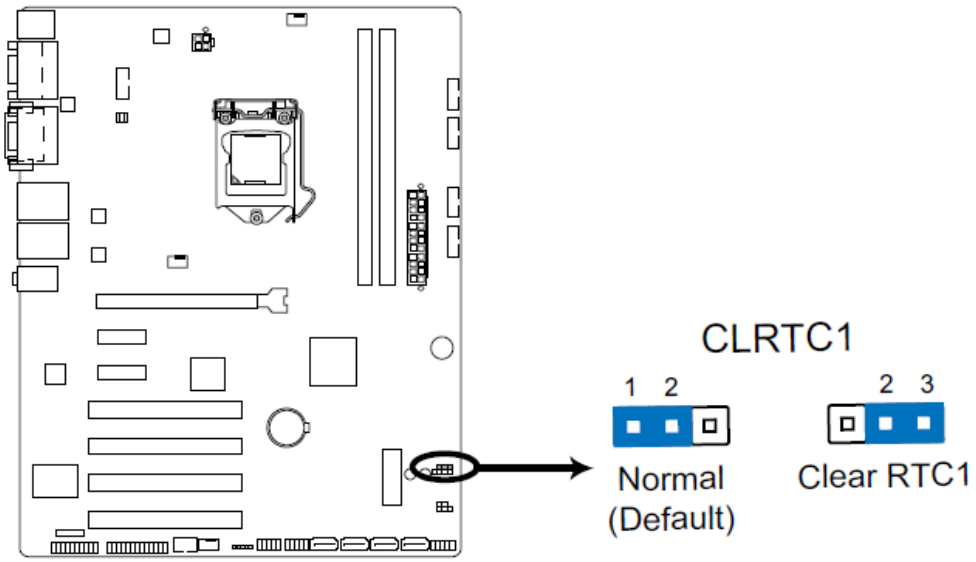


List of Onboard Connectors

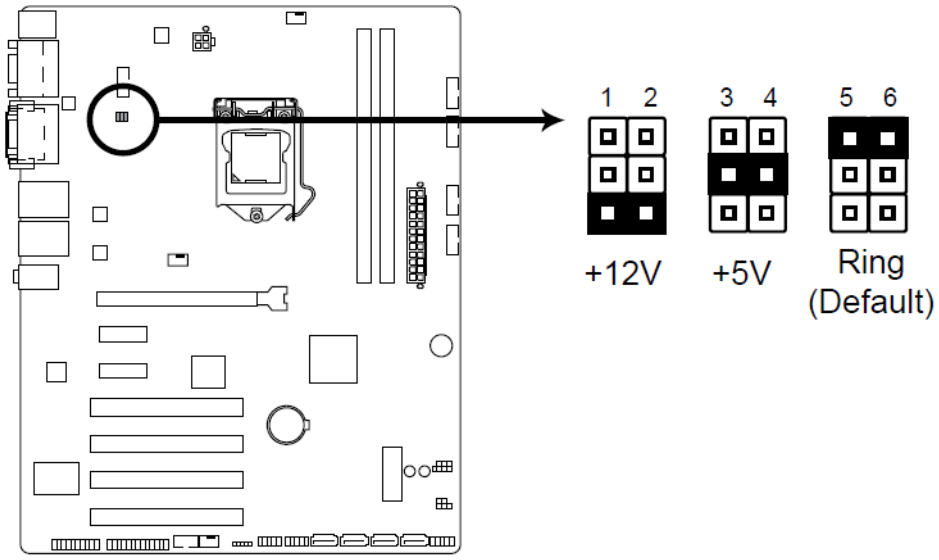
1	Serial port connectors (10-1 pin COMBH2, COM3~6)
2	COM2_V1 Ring/+5V/+12V selection (6-pin)
3	CPU and chassis fan connectors (4-pin CPU_FAN, 4-pin CHA_FAN)
4	ATX power connectors (24-pin EATXPWR, 4-pin EATX12V)
5	Intel® LGA1155 CPU socket
6	DDR3 DIMM slots
7	Standby Power LEDs (SB_PWR1/2)
8	Clear RTC RAM (3-pin CLRTC)
9	Chassis intrusion connector (4-1 pin CHASSIS1)
10	Direct connector (2-pin DRCT1)
11	AT Mode selection (3-pin ATMODE)
12	System panel connector (10-1 pin F_PANEL)
13	Intel® H61 Serial ATA 3.0Gb/s connectors (7-pin SATA3G_1~4)
14	USB 2.0 connectors (10-pin USB89, USB45; 5-pin USB10)
15	Digital I/O connector (10-pin DIO1)
16	LPT connector (26-1 pin LPT)
17	TPM connector (20-1 pin TPM1)

2.6 Jumpers

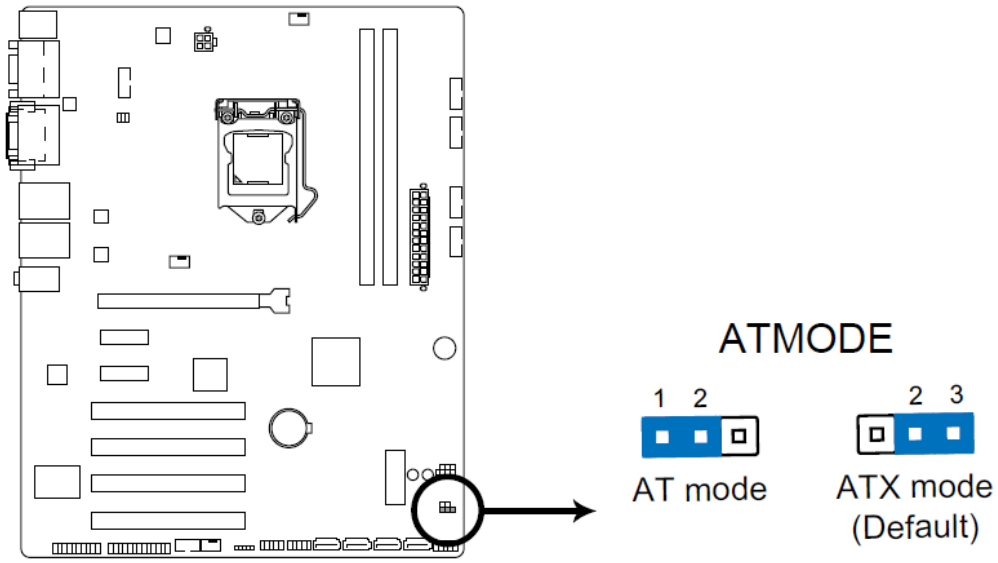
▶ Clear CMOS Jumper



▶ COM2 RI-pin Power Selection Jumper

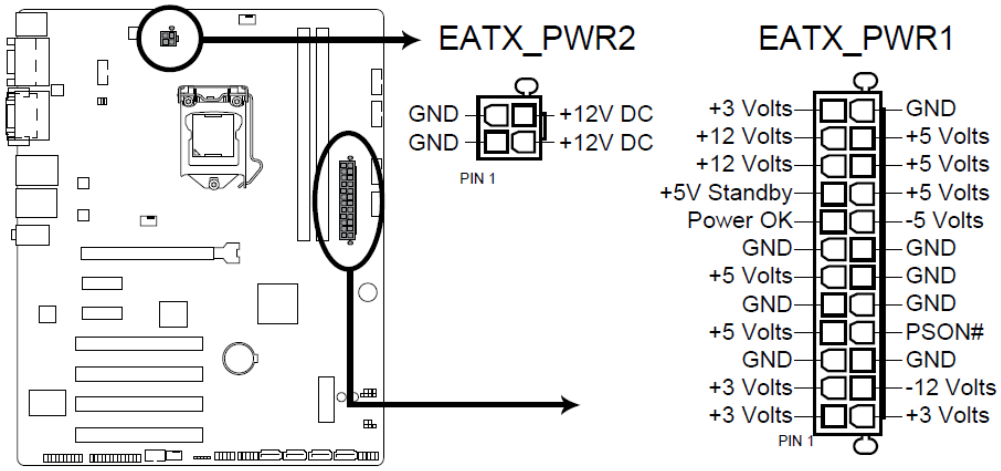


▶ AT/ATX Mode Selection Jumper

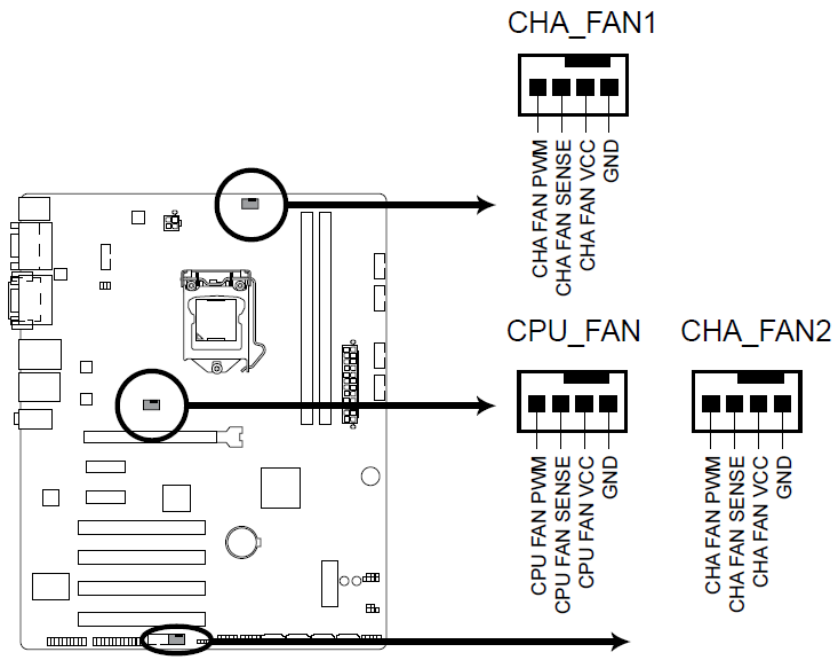


2.7 Internal Connectors

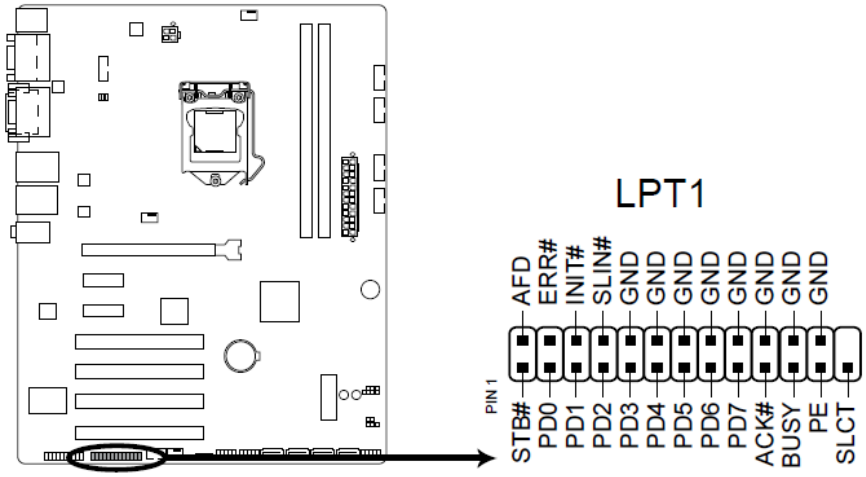
24-pin ATX Power Connector



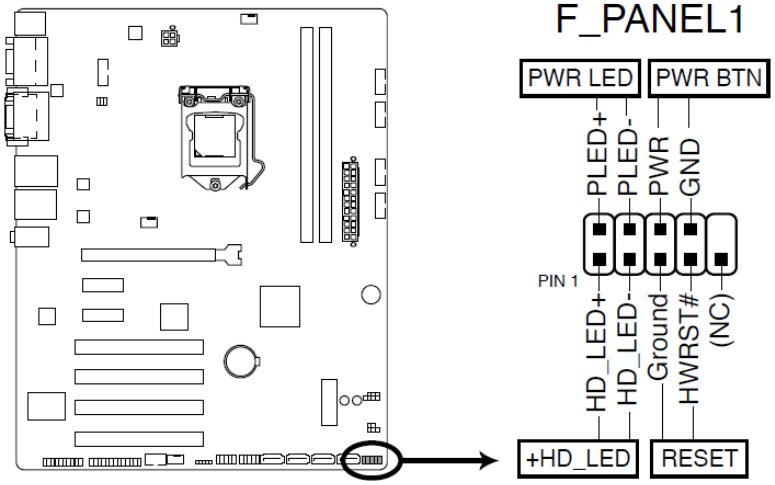
4-pin CPU/Chassis Fan Connector



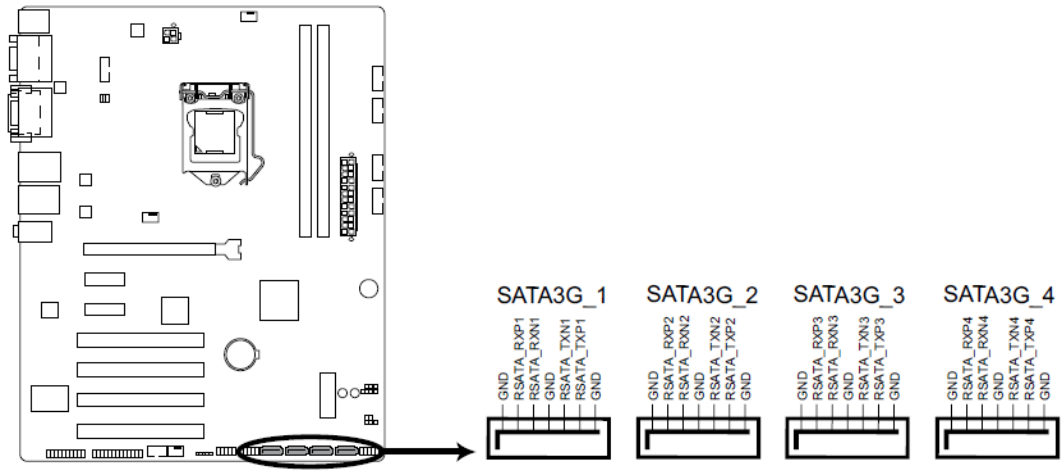
25-pin LPT Connector



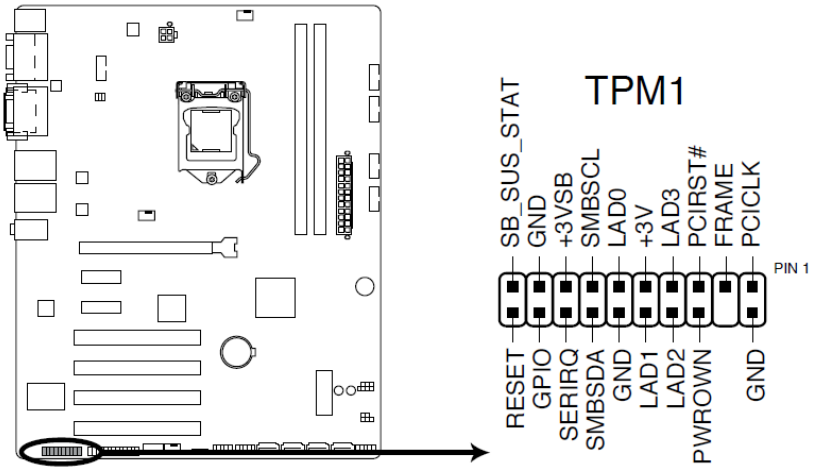
9-pin System Panel Connector



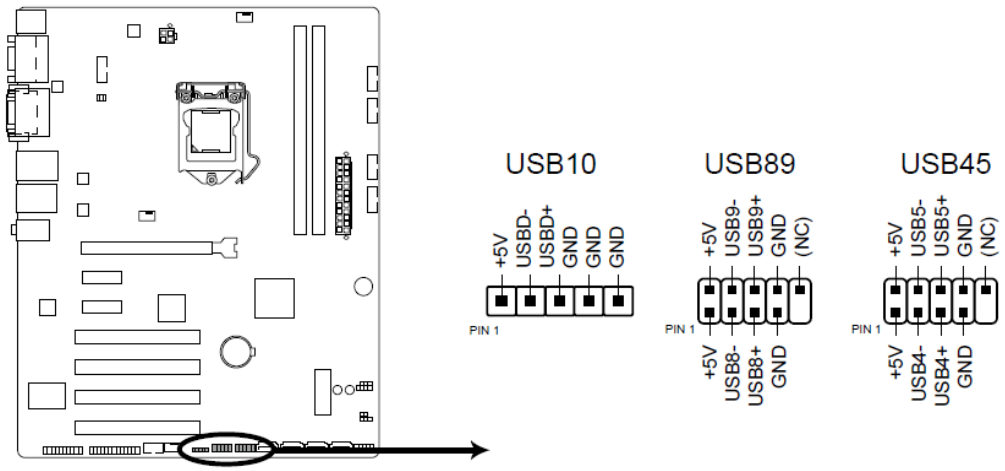
7-pin SATA Connector



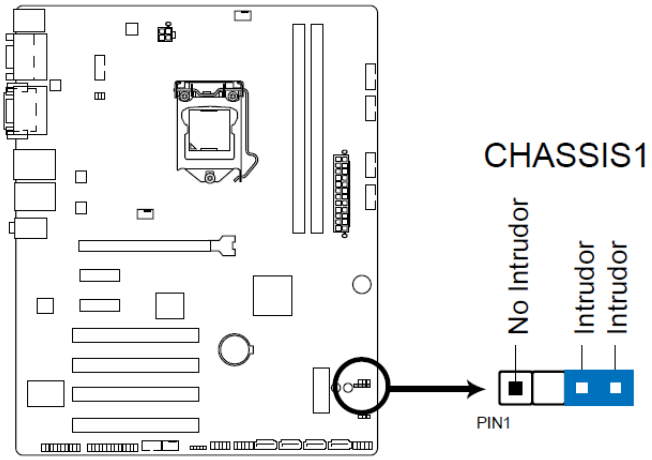
19-pin TPM Connector



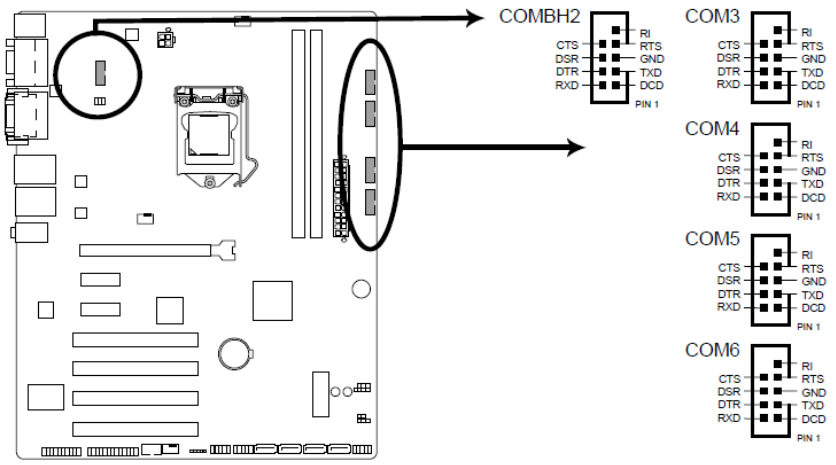
9-pin USB 2.0 Connector



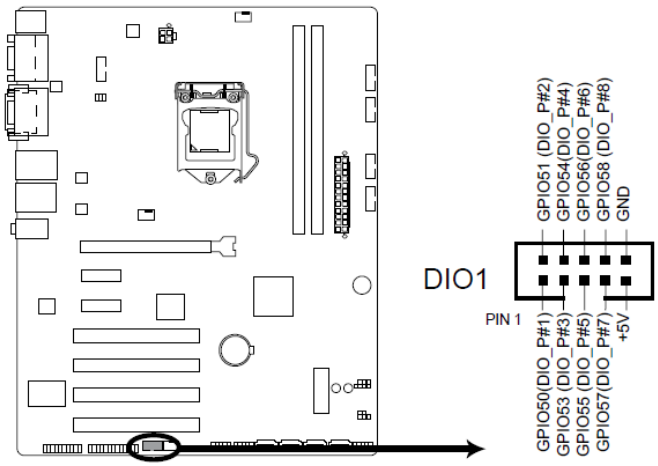
4-pin Chassis Intrusion Connector



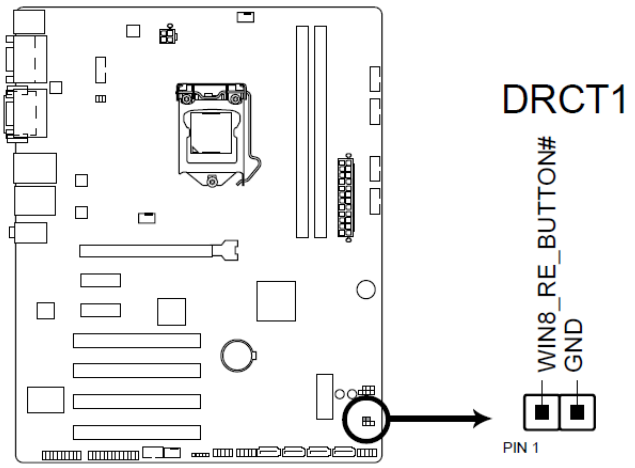
9-pin Serial Port Connector



10-pin Digital I/O Connector



2-pin DirectKey Connector



Chapter 3
Operation

3.1 System Memory

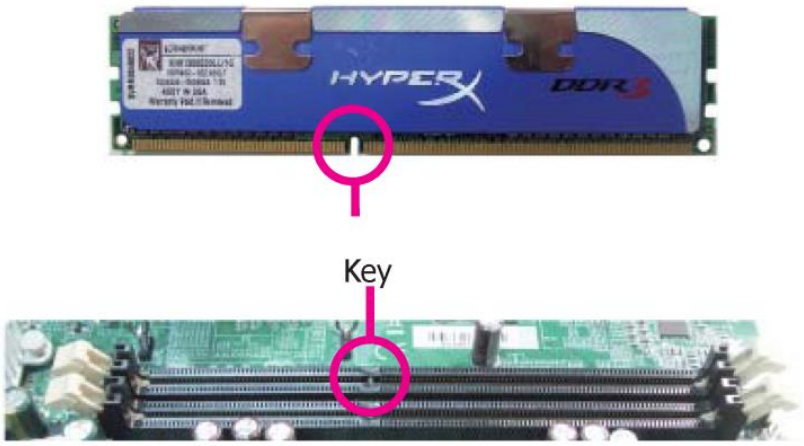
BNX-A61B has Intel® H61 chipset built-in, and supports dual channel non-ECC, un-buffered DDR3-1066/1333/1600MHz memory modules. Two DIMM slots support up to 16GB Memory Capacity.

3.2 Installing Memory

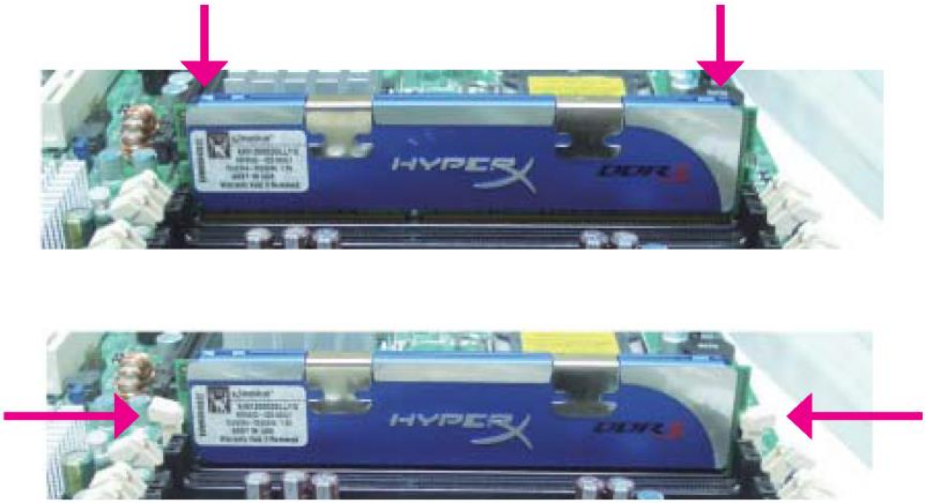
To install Memory

1. Open up the two side tabs on the slot.

2. Make sure the “Key” on Memory module and socket are perfectly matched, and add slowly the RAM module into the socket along the plastic guides at both ends.



3. Make sure the Memory modules are perfectly snapped by the socket, and the two tabs are restored back to “close” position automatically. If not, press the tabs to “close” position.



4. To remove the Memory modules, please push the tabs outwards, and the memory modules will be automatically disengaged.

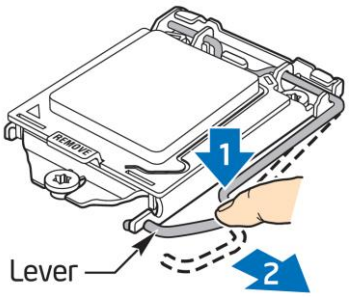
3.3 Installing LGA1155 Intel® Core-i CPU, Heatsink, and Fan

BNX-A77 supports Intel® LGA1155 Gen-2/3 Core-i Processor. For a reference list of supported processor, please refer to the specification section. The socket 1155 is formed up with sensitive arrays of pins, improper or careless installation may cause permanent harm to the socket pins. In some cases users may accidentally damage the socket simply by adjusting the position of the CPU.

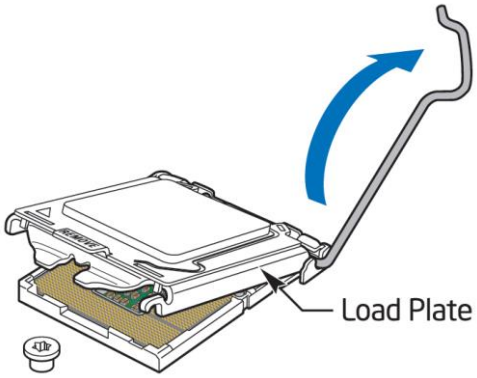
Please follow the installation instructions as shown below:

Step (A): Opening the Socket

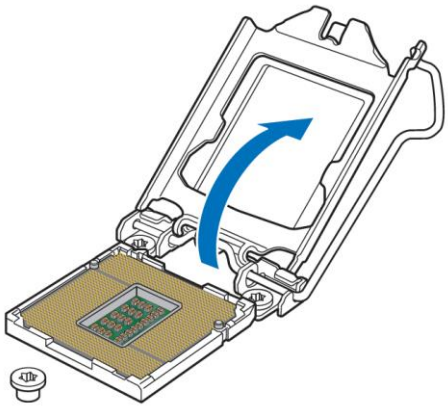
1. Push the "Socket Lever" down and away from the socket to release it.



2. Rotate the "Socket Lever" to lift the "Load Plate" away from the socket.



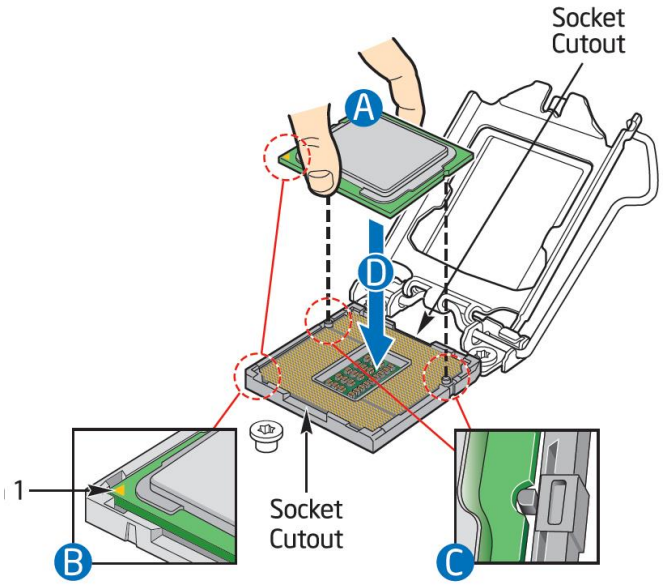
3. Make sure the "Load Plate" is in the fully open position, and also remove the socket cover.



4. When opening the socket, DO NOT TOUCH the gold socket contacts.

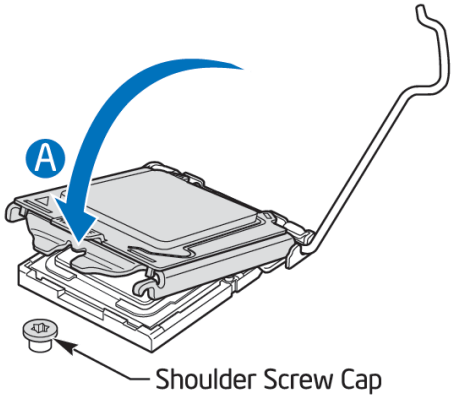
Step (B): Install the Processor

1. Hold the processor with your thumb and index finger as shown to align your fingers with the socket cutouts.
2. Make sure that the processor Pin#1 indicator (gold triangle) is aligned with the Pin#1 chamfer on the socket.
3. Make sure that the notches on the processor align with the posts on the socket.
4. Lower the processor straight down without tilting or sliding it in the socket.

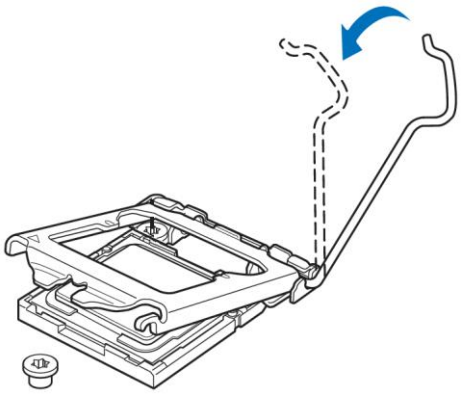


Step (C): Close the Load Plate

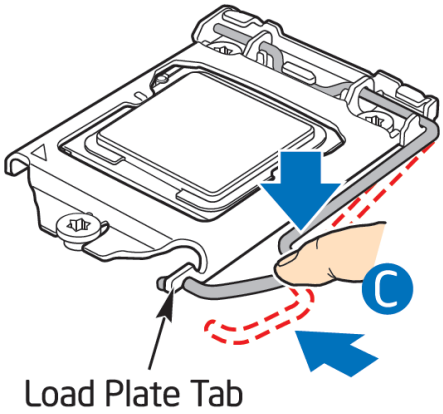
1. Carefully lower the “Load Plate” and make sure it slides under the shoulder screw cap as the lever is lowered.



2. Continue to low the lever.



3. Latch the socket lever under the load plate tab.



Step (D): Install a Heatsink

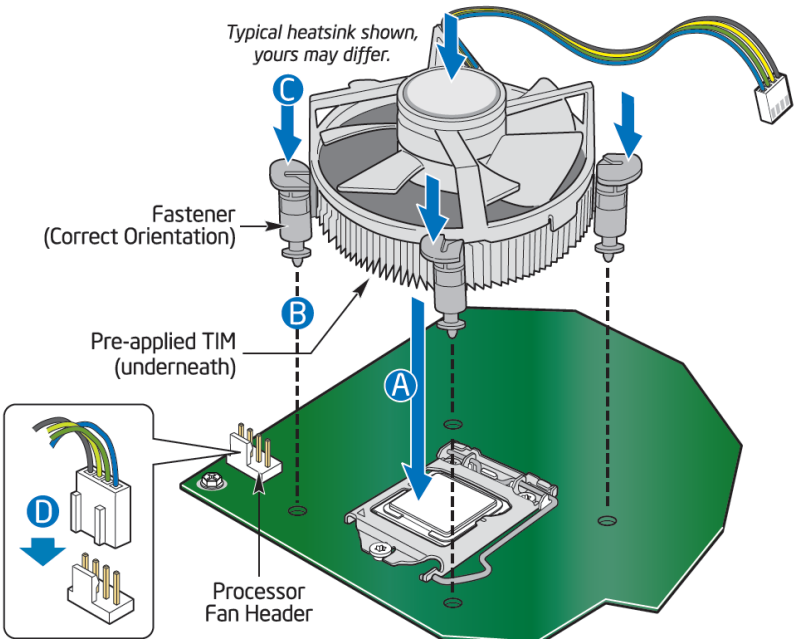
Note: Heatsinks that come with boxed Intel® processors use pre-applied Thermal Interface Material (TIM) and do not need thermal grease. If a different heatsink is used, please refer to manufacturer's instructions.

1. Place the heatsink onto the processor socket. Ensure that the fan power cable is on the side closet to the processor fan header.

2. Align the fasteners with the corresponding board holes (four of them). Ensure that the fasteners slots are pointing perpendicular to the heatsink.

3. While pressing down on the heatsink, press down on the top of the fasteners with your thumb to lock into place. Ensure that all four fasteners are secured.

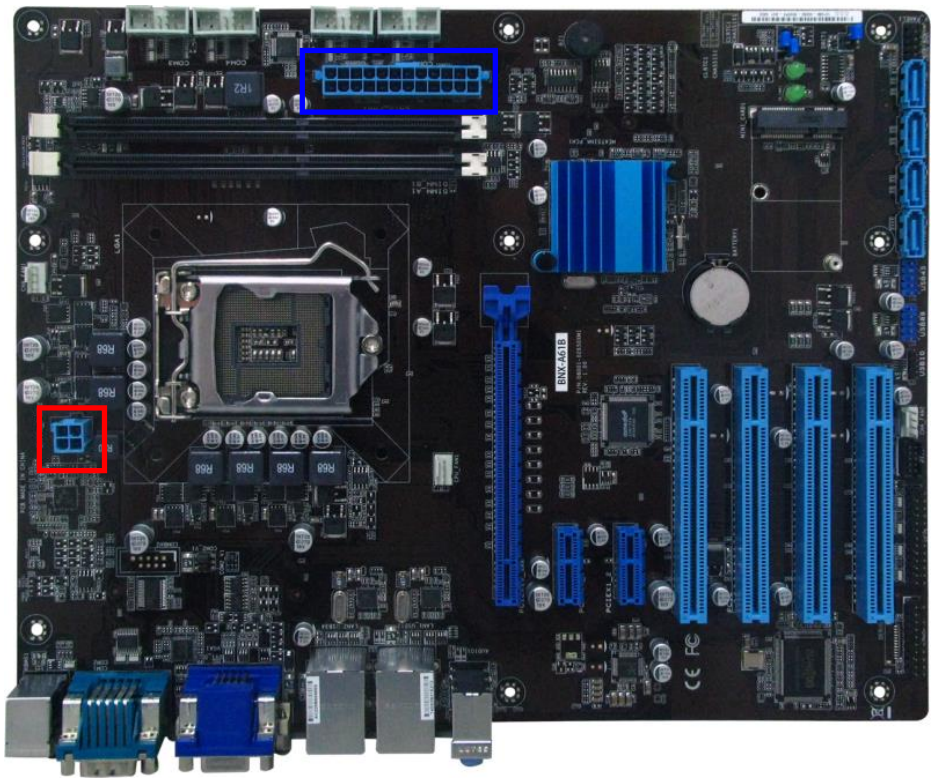
4. Connect the heatsink fan power cable to the processor fan header.



3.4 Adding Power Connectors

BNX-A61B motherboard requires correct power plan to properly support Intel® LGA1155 Gen-2/3 Core-i Processor. Please add the 24-pin ATX Power Connector on the blue connector, and 4-pin 12Vdc Power Connector on the red connector.

In case the 12Vdc Power Connector is not added, power supply will be triggered, but the motherboard would not boot at all. Please shutdown the system, and add the 12Vdc Power Connector back on.

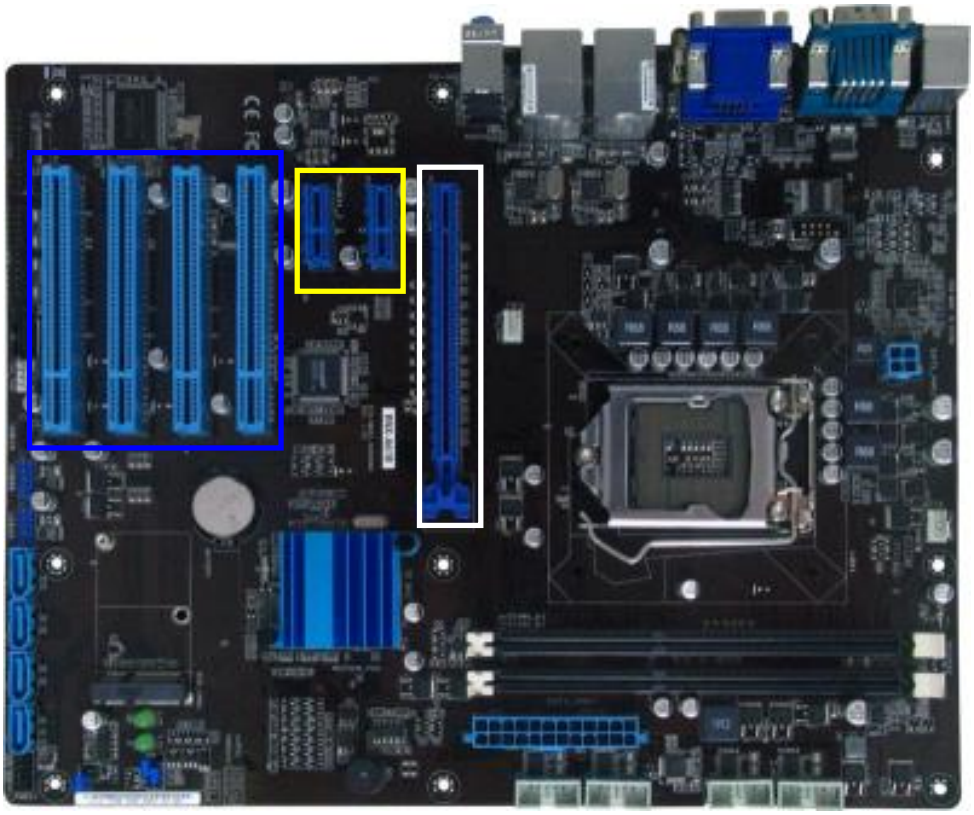


3.5 Adding PCIe/PCI Cards

BNX-A61B motherboard comes with 3* PCIe Slots and 4* PCI Slots. Prior to add your expansion card onto these slots, please:

(1) Identify the type of expansion card to be added. In the picture below:

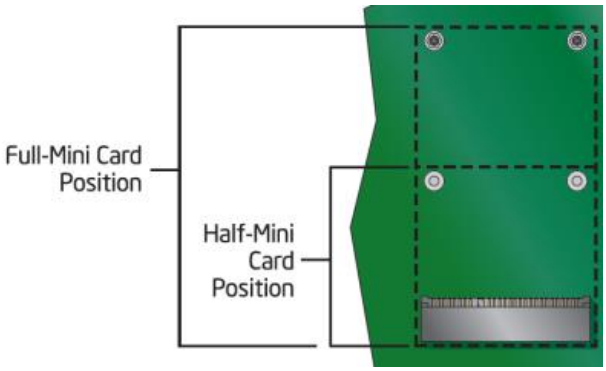
Color	Definition	Signal	Deployment
Blue	4* PCI Slots	PCI Signal	5V or Universal PCI
Yellow	1* PCIe X1 Slot	PCIe 2.0 X1 Signal	Good for PCIe X1 Card
White	1* PCIe X16 Slot	PCIe 2.0/3.0 X16 Signal.	● Speed of PCIe (2.0 or 3.0) bus is determined by CPU ● Good for all PCIe Cards



(2) Shutdown the system (would be nice to cut the power) if system is running.
(3) Plug in the cards and put the power back on.
(4) Please refer to the application notes of user's manual of the expansion card to load driver files or initiate the expansion cards.

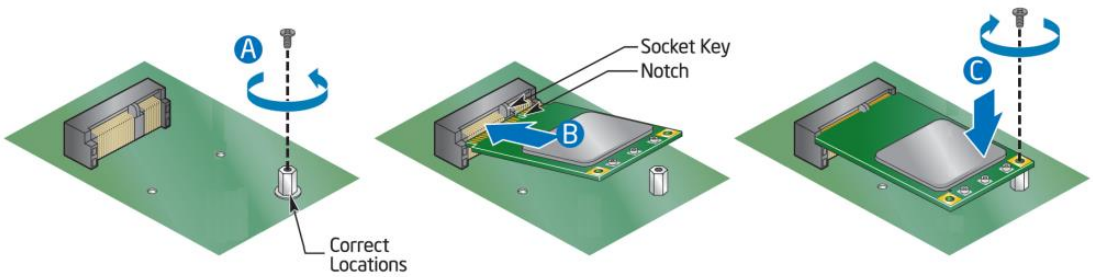
3.6 Install a PCI Express Mini Card in the Full-Mini Card Slot

The Full-Mini Card slot can only be used with a Full-sized PCI Express Mini Card.



PCI Express Full-Mini Card Installation:

(A) If a screw is found in the stand-off, please remove the screw.
(B) Align the notch in the card with the socket key and insert the card at a slightly upward angle as shown.
(C) Push down on the card and secure with one screw.



Chapter 4
BIOS Setup

About the BIOS

The BIOS (Basic Input and Output System) Setup program is a menu driven utility that enables you to make changes to the system configuration and tailor your system to suit your individual work needs. It is a ROM-based configuration utility that displays the system's configuration status and provides you with a tool to set system parameters. These parameters are stored in non-volatile battery-backed-up CMOS RAM that saves this information even when the power is turned off. When the system is turned back on, the system is configured with the values stored in CMOS.

With easy-to-use pull down menus, you can configure such items as:

- Hard drives, diskette drives, and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power management features

When to Run BIOS

This program should be executed under the following conditions:

- When changing the system configurations.
- When a configuration error is detected by the system and you are prompted to make changes to the Setup program.
- When resetting the system clock.
- When setting the CPU clock speed so that it automatically runs either fast or slow.
- When redefining the communication ports to prevent any conflicts.
- When making changes to the Power Management configuration.
- When changing the password or making other changes to the security setup.

Normally, CMOS setup is needed when the system hardware is not consistent with the information contained in the CMOS RAM, whenever the CMOS RAM loses power, or when the system features need to be changed.

When to Update BIOS

In the event that new features are released and a BIOS update is required, you will need to update your BIOS on your own, with the help of an appropriate guide, a reference tool, and some command files for the job.

Please seek for help from your local dealer, or send your request to our technical support department.

4.1 Entering Setup

When the system is powered on, the BIOS will initiate the Power-On-Self-Test (POST) routines. These routines perform various diagnostic checks. If an error is encountered, the error will be reported in one of two different ways:

- If the error occurs before the display device is initialized, a series of beeps will be transmitted.
- If the error occurs after the display device is initialized, the screen will display the error message.

Powering on the computer and immediately pressing <**Del**> allows you to enter Setup. Another way to enter Setup is to power on the computer and wait for the following message during the POST:

TO ENTER SETUP BEFORE BOOT
PRESS <CTRL-ALT-ESC> OR <DEL> KEY

Press the <**Del**> key or press the <**Ctrl**>, <**Alt**>, and <**Esc**> keys to enter Setup.

4.2 Getting Help

The online description of the highlighted setup item is displayed at the right pane of the menu at all time. Press F1 to pop up a small help window that lists all the function keys and its use.

To exit the Help Window, press **<F1>** or **<Esc>.**

4.3 Control Keys

The table below lists all the function keys for the navigation in the BIOS setup menu.

Function Key	**Description**
Up/Down Arrow Key	Move Up/Down
Left/Right Arrow Key	Move Left/Right
Enter Key	Select
+/- Key	Change value
ESC	Exit
F1	General Help
F2	Previous Values
F3	Short Cut
F5	Optimized Defaults
F10	Save
F12	Print Screen

To exit the Help Window, press **<F1>** or **<Esc>.**

4.4 The Main Menu

Figure 4-1: BIOS Setup Utility Main Menu

The menu bar on the top of the first screen has the following submenus:

- **Main:** Basic system configuration.
- **Advanced:** Advanced system settings.
- **Boot:** System boot configuration.
- **Tool:** Other functions.
- **Exit:** Exit options as well as loading optimal defaults

System Language [English]: Set the BIOS language.
System Date [Day xx/xx/xxxx]: Set the system date.
System Time [xx:xx:xx]: Set the system time.
Security: Change the system security settings (Admin/User Password).

4.5 Advanced Menu

In this section, you may set the configurations for the following items: CPU Configuration, PCH Configuration, SATA Configuration, System Agent Configuration, USB Configuration, SIO GPIO, Onboard Devices Configuration, APM, and Network Stack.

CPU Configuration

Intel® Adaptive Thermal Monitor [Enabled]

Enable/Disable CPU to throttling

Hyper-threading [Enabled]

Enable/Disable Hyper-Threading function.

*Available only when the installed Intel® Processor supports this feature.

Active Processor Cores [All]

Set the number of CPU cores to be activated in each processor package.

Limit CPUID Maximum [Disabled]

Enabled to allow legacy Oss to boot with CPUs that do not come with extended CPUID functions.

Execute Disable Bit [Enabled]

Enable/Disable the No-Execution Page Protection Technology.

Intel Virtualization Technology [Disabled]

Enable/Disable Intel® Virtualization Technology.

Hardware Prefetcher [Enabled]

Enabled to turn on /off the Mid Level Cache (L2) streamer prefetcher.

Adjacent Cache Line Prefetch [Enabled]

Enabled to allow a hardware platform to perform adjacent cache line prefetching.

PCH Configuration

High Precision Timer [Enabled]

Enabled/Disabled the High Precision Event Timer.

SATA Configuration

While entering Setup, BIOS automatically detects all connected SATA devices. In case no SATA device is attached to a particular SATA Port, **Not Present** message will be prompted.

SATA Mode Selection [AHCI]

[Disable] to disable SATA controller

[IDE] to use SATA device in IDE mode

[AHCI] to use SATA device in AHCI mode

S.M.A.R.T. Status Check [Enabled]

Enable/Disable the S.M.A.R.T. technology.

Hot Plug [Disabled]

Enable/Disable the hot-plug support for each SATA port.

*This is only available at AHCI mode

System Agent Configuration

Memory Remap Feature [Enabled]

Enable/Disable memory remap feature.

Graphics Configuration

Primary Display [Auto]

Preset the primary boot device from [Auto] [iGPU] [PCIE] [PCI]

iGPU Memory [Auto]

Set the system memory size allocated to DVMT 5.0 used by iGPU from [Auto] [32M] [64M] [96M] [128M] ~ [448M] [480M] [512M] [1024M]

Render Standby [Enabled]

Enable Intel® Graphics Render Standby support to reduce the power consumption for iGPU while the system is idle.

iGPU Multi-Monitor [Disabled]

Enable/Disable iGPU Multi-Monitor support for add-on graphics devices. The iGPU shared memory size will be fixed at 64MB.

USB Configuration

Legacy USB Support [Enabled]

Enable/Disable the support for USB devices on legacy operating systems.

[Disabled] The USB devices can be used only for the BIOS setup program.

[Auto] Allows the system to detect the presence of USB devices at startup. If detected, the USB controller legacy mode is enabled. If no USB device is detected, the legacy USB support is disabled.

EHCI Hand-off [Disabled]

Enable/Disable the support for operating systems without an EHCI hand‐off feature.

SIO GPIO

GPIO 1~8 [Input]

Configure the digital signal of GPIO pins 1~8.

[Input] GPIO pin set as input pin

[Output High] GPIO pin set as output pin at Logic High

[Output Low] GPIO pin set as output pin at Logic Low

Onboard Devices Configuration

HD Audio Controller [Enabled]
Enable/Disable High Definition Audio Controller.
Realtek LAN1 Controller [Enabled]
Enable/Disable the Realtek LAN controller 1.
Realtek LAN1 PXE OPROM [Disabled]
Enable/Disable PXE OptionRom of the Realtek LAN controller 1.
*This is only available when **Realtek LAN1 Controller** is enabled.
Realtek LAN2 Controller [Enabled]
Enable/Disable the Realtek LAN controller 2.
Realtek LAN2 PXE OPROM [Disabled]
Enable/Disable PXE OptionRom of the Realtek LAN controller 2.
*This is only available when **Realtek LAN2 Controller** is enabled.
RS Mode [RS232]
Configure the operation mode of COM2 as RS-232/422/485

APM

AT/ATX Power Type [ATX Mode]
Set the power mode to AT/ATX
*This will directly affect the **Restore AC Power Loss** setting
Restore AC Power Loss [Power Off]
Set the operating state after system is recovered from AC power loss.
[Power On] ON State
[Power Off] OFF State
[Last Status] Last State at which system is maintained before the AC power loss
*This will not be available if AT Mode is selected.
Power On By PCIE/PCI [Disabled]
Enable/Disable PCIE/PCI devices to generate a wake event.
Power On By Ring [Disabled]
Enable/Disable Ring to generate a wake event.
Power On By RTC [Disabled]
Enable/Disable RTC to generate a wake event. At enabled, **RTC Alarm Date (Days)** and **Hour/Minute/Second** become available for user to set values. See below for details.

RTC Alarm Date (Days)

Select RTC alarm time (days). When set to zero, the RTC alarms every day. Use <+> and <-> keys to adjust the time.

- Hour / - Minute / - Second

Set the RTC alarm time. Use <+> and <-> keys to adjust the time.

Network Stack

Network Stack [Disabled]

Enable/Disable UEFI network stack.

Ipv4 PXE Support [Enabled]

At disabled, IPV4 PXE boot option will not be created.

*This is available only when Network Stack is enabled.

Ipv6 PXE Support [Enabled]

At disabled, IPV6 PXE boot option will not be created.

*This is available only when Network Stack is enabled.

4.6 The Monitor Menu

This section is used to monitor system temperature/power status, and change the fan settings.

CPU Temperature / MB Temperature [xxxºC/xxxºF]

Display CPU and motherboard temperatures.

CPU / Chassis Fan Speed [xxxx RPM]

Display the CPU and chassis fan speeds in (RPM). If no fan is connected, **N/A** is given.

CPU Q-Fan Control [Enabled]

Enable/Disable CPU Q-Fan control feature.

CPU Fan Profile [Standard]

Set the appropriate performance level of the CPU fan.

[Standard] CPU fan speed is adjusted by the CPU temperature.

[Silent] Minimize the CPU fan speed for the least noisy operation.

[Turbo] Maximize CPU fan speed for the best performance.

* This is available only when **CPU Q-Fan Control** is enabled.

Chassis Q-Fan Control [Enabled]

Enable/Disable Chassis Q-Fan control feature.

Chassis Fan Profile [Standard]

Set the appropriate performance level of the chassis fan.

[Standard] Chassis fan speed is adjusted by the chassis temperature.

[Silent] Minimize the chassis fan speed for the least noisy operation.

[Turbo] Maximize chassis fan speed for the best performance.

* This is available only when **Chassis Q-Fan Control** is enabled.

CPU Voltage, 3.3V Voltage, 5V Voltage, 12V Voltage

Display each power rail as 3.3V, 5V, and 12V.

4.7 The Boot Menu

Full Screen Logo [Enabled]

Enable/Disable full screen logo display feature.

Post Report [5 sec]

Set the waiting time for the system to display post report, from [1 sec] ~ [10 sec], or [Until Press ESC]

*This is available only when Full Screen Logo is disabled.

Post Delay Time [3 sec]

Set the POST Report delay time, from [0 sec] ~ [10 sec]

Bootup NumLock State [On]

[On] Set NumLock to [On] at power on.

[Off] Set NumLock to [Off] at power on.

Wait for 'F1' If Error [Disabled]

[Enabled] to let system wait for the F1 key to be pressed when error occurs.

Option ROM Messages [Force BIOS]

[Force BIOS] The third-party ROM messages will be forced to display at the boot sequence.

[Keep Current] The third-party ROM messages will be displayed only if the third party manufacturer had set the add-on device to do so.

CSM (Compatibility Support Module)

This option controls whether or not CSM (Compatibility Support Module) will be launched.

Launch CSM [Enabled]

Enable CSM to fully support the non-UEFI driver add-on devices, or the Windows UEFI mode.

Disable CSM to fully support the Windows Security Update and Security Boot.

Boot Device Control [UEFI and Legacy OpRom]

[UEFI and Legacy OpRom] [Legacy OpRom only] [UEFI only]

Boot from Network Devices [Legacy OpRom first]

[Legacy OpRom first] [UEFI driver first] [Ignore]

Boot from Storage Devices [Legacy OpRom first]

[Both, Legacy OpRom first] [Both, UEFI first] [Legacy OpRom first] [UEFI driver first] [Ignore]

Boot from PCIe/PCI Expansion Devices [Legacy OpRom first]

[Legacy OpRom first] [UEFI driver first]

Boot Option Priorities

Used to specify the boot device sequence.

The number of bootable devices depends on the number of attached devices.

*Press <F8> at POST to bring up quick boot menu.

*Press <F8> after POST to bring up Windows Safe Mode.

Boot Override

All bootable devices would be available here and please select one to boot from it immediately.

4.8 The Tool Menu

EZ Flash 2 Utility

Run EZ Flash 2 for BIOS update.

SPD Information

DIMM Slot # [DIMM_A1]

Displays the SPD information of the DIMM module installed on the selected slot.

4.9 The Exit Menu

Load Optimized Defaults

Use this (or press <F5>) to load the optimized default values, and a confirmation window will pop up. Select Yes at next confirm.

Save Changes & Reset

Use this (or press <F10>) to save all the changed values and exit BIOS setup menu, and a confirmation window will pop up. Select Yes at next confirm.

Discard Changes & Exit

Use this (or press <ESC>) to discard all the changed values and exit the BIOS setup menu, and a confirmation window will pop up. Select Yes at next confirm.

Launch EFI Shell from filesystem device

Use this to launch the EFI Shell application (shellx64.efi) from one of the available devices that have a file system.